

Fig. 1
(Prior Art)

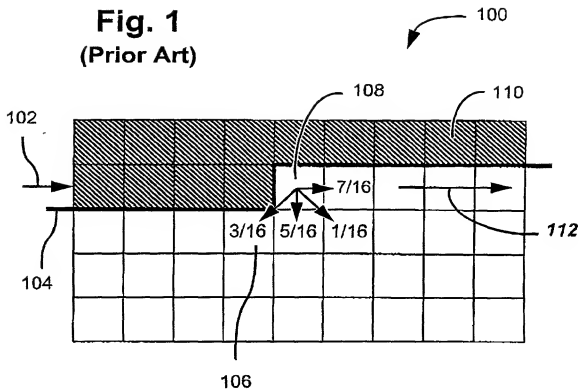
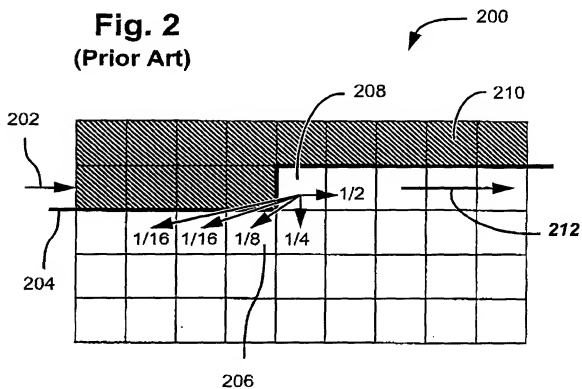


Fig. 2
(Prior Art)



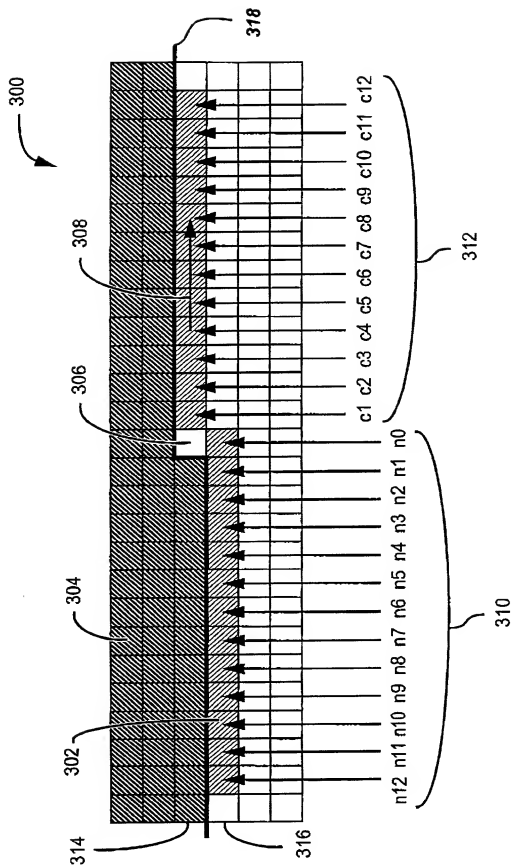


Fig. 3

400

mask position	mask weight	mask position	mask weight
n0	0.236962		
n1	0.127126	c1	0.534915
n2	0.048164	c2	-0.080892
n3	0.023072	c3	0.0286
n4	0.013238	c4	0.007557
n5	0.008605	c5	0.003258
n6	0.006122	c6	0.005601
n7	0.004631	c7	0.002344
n8	0.003692	c8	0.002784
n9	0.003043	c9	0.00211
n10	0.002717	c10	0.005269
n11	0.002068	c11	-0.005752
n12	0.003602	c12	0.011165

402

404

406

408

Fig. 4

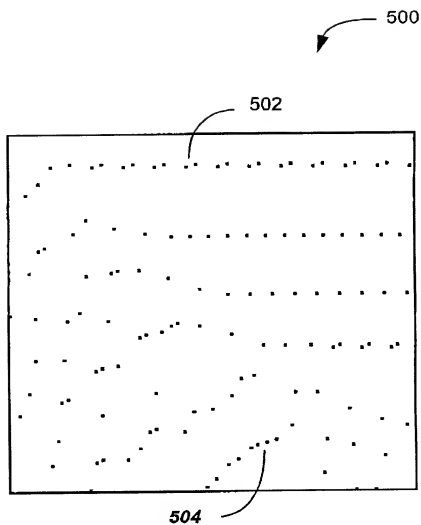


Fig. 5
(Prior Art)

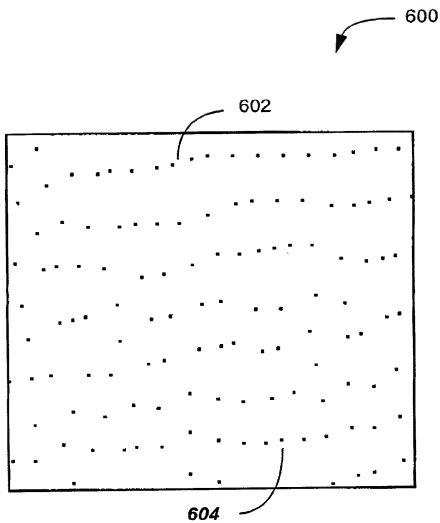
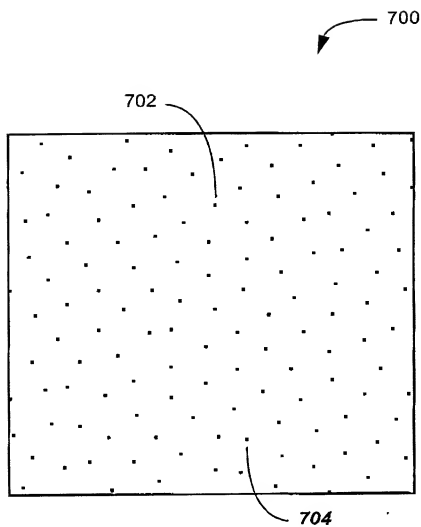
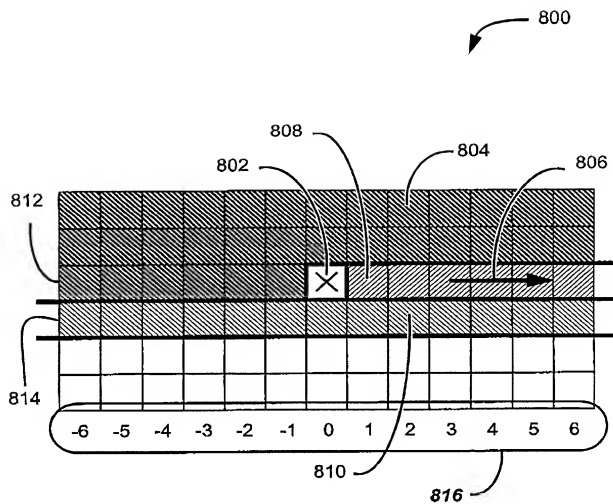


Fig. 6
(Prior Art)

**Fig. 7**

**Fig. 8**

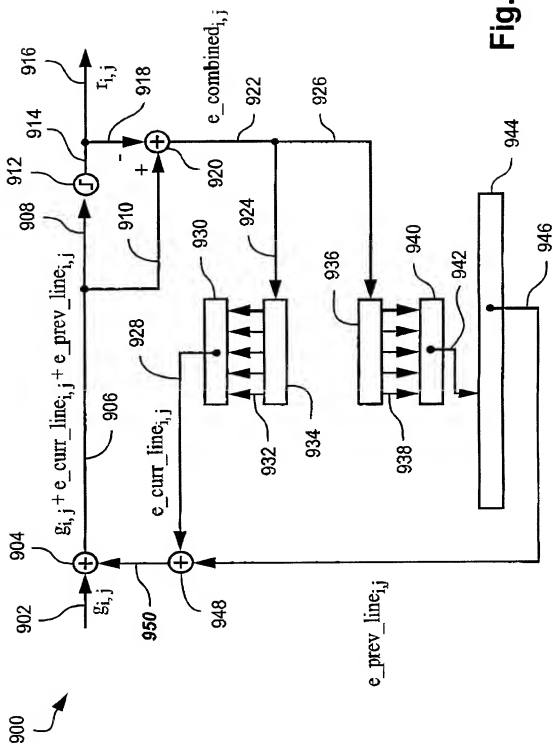


Fig. 9

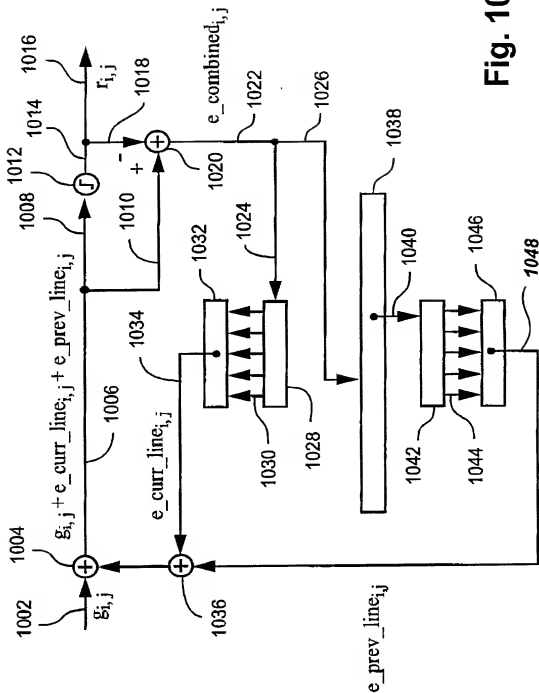


Fig. 10

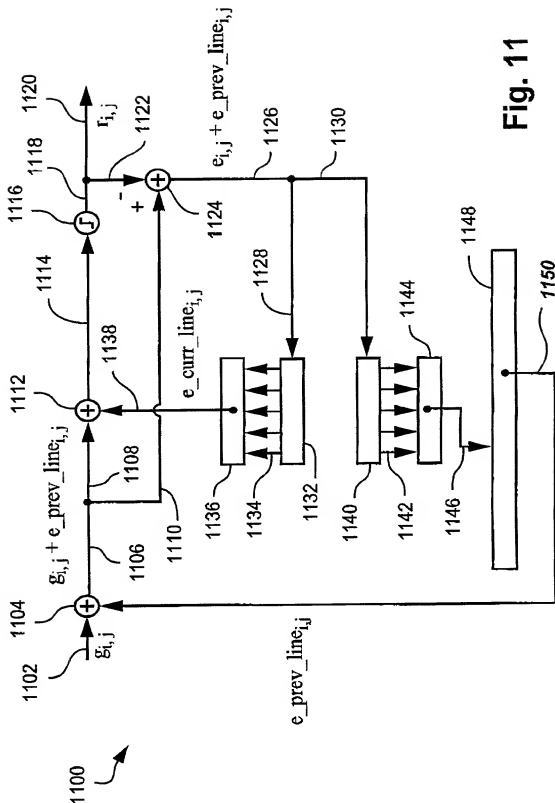


Fig. 11

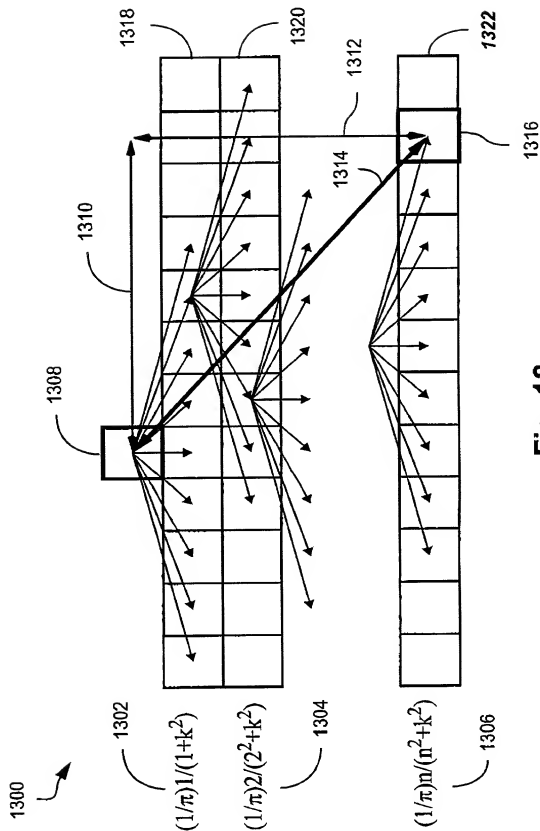
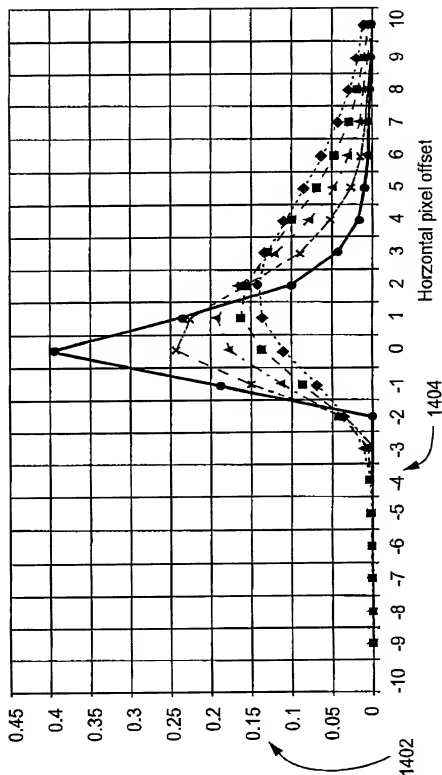
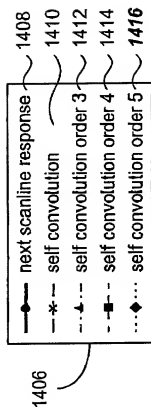


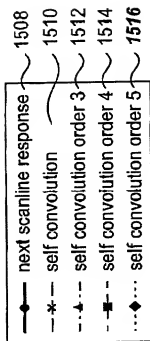
Fig. 13

Fig. 14

1400

Floyd Steinberg error diffusion next
scanline error impulse response
function and its self-convolutions



**Fig. 15**

Error diffusion of USP 5,353,127 (Shiau & Fan)
 (mask: $1/2, 1/4, 1/8, 1/16, 1/16$)
 next scanline error impulse response
 function and its self-convolutions

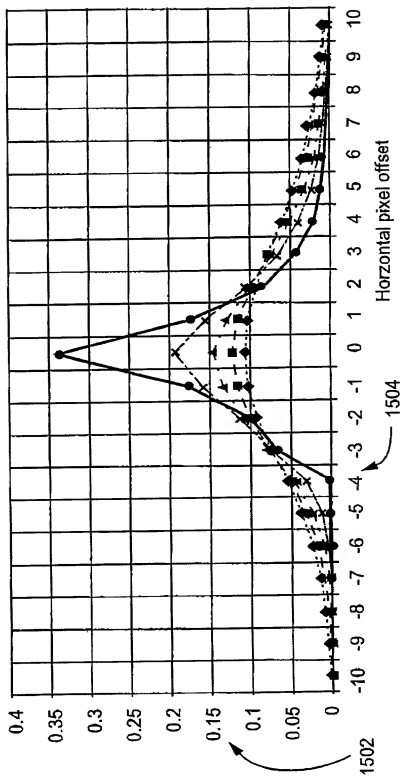
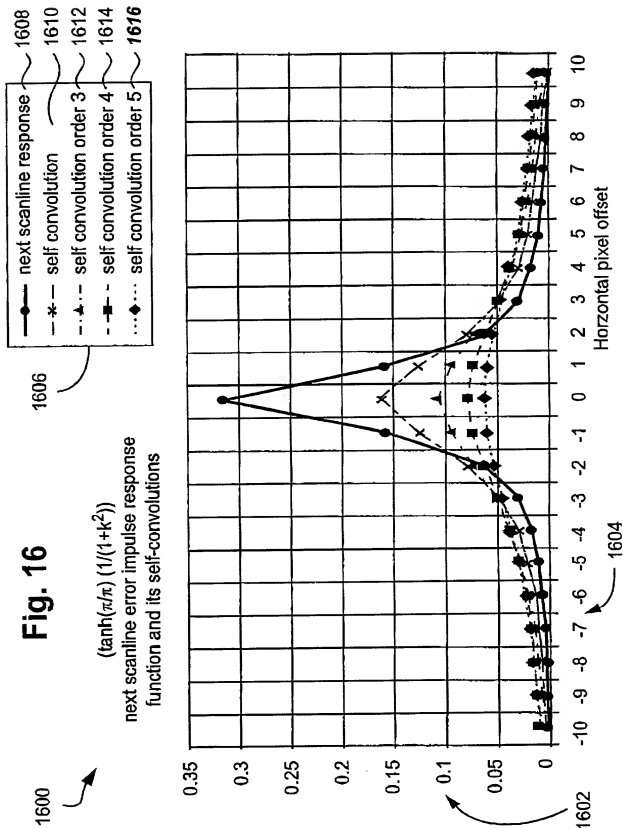


Fig. 16



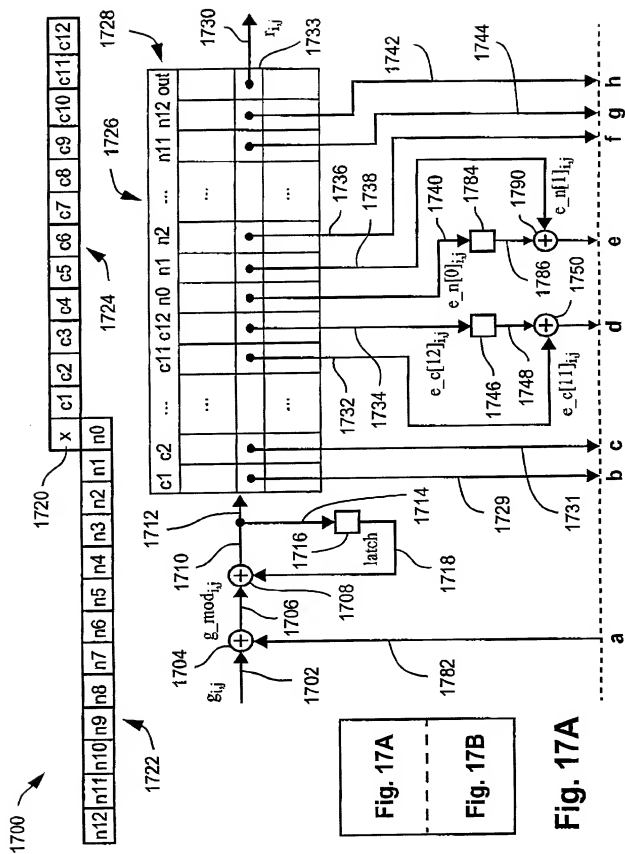
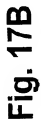


Fig. 17A



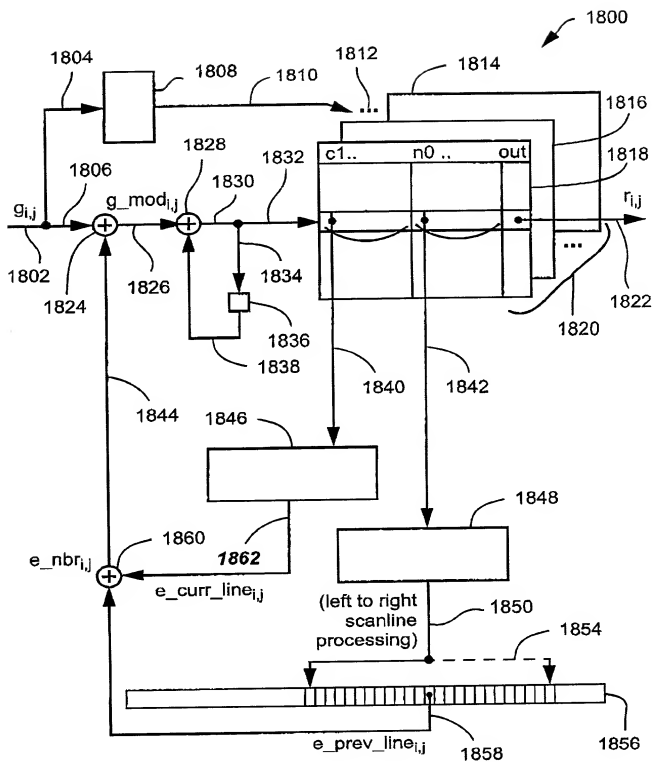


Fig. 18

1900

pixel offset	mask 1	mask 2	mask 3	mask 4	mask 5	mask 6
c1	0.590522	0.474801	0.561741	0.536627	0.538362	0.536667
c2		0.063092	-0.122958	-0.059029	-0.080649	-0.076928
c3			0.099337	-0.006168	0.043546	0.02488
c4				0.057792	-0.01825	0.022132
c5					0.042134	-0.018664
c6						0.034487
c7						
c8						
c9						
c10						
c11						
c12						
n0	0.222974	0.243788	0.236484	0.237737	0.237758	0.237552
n1	0.186504	0.137512	0.132786	0.130425	0.129196	0.128519
n2		0.080808	0.050122	0.051474	0.050109	0.049341
n3			0.042489	0.024984	0.025532	0.024637
n4				0.026159	0.014588	0.014971
n5					0.017672	0.009629
n6						0.012776
n7						
n8						
n9						
n10						
n11						
n12						

1902

1904

1906

1908

1910

1912

1914

Fig. 19A

Fig. 19B

Fig. 19A

1900

mask 7	mask 8	mask 9	mask 10	mask 11	mask 12
0.53547	0.535275	0.535142	0.535113	0.535478	0.534915
-0.07781	-0.077282	-0.080266	-0.080382	-0.08105	-0.080892
0.028431	0.026191	0.029559	0.029124	0.028874	0.0286
0.008507	0.010402	0.008627	0.007733	0.007593	0.007557
0.010482	0.001604	0.002612	0.003383	0.003171	0.003258
-0.010039	0.012859	0.004904	0.005821	0.006146	0.005601
0.025736	-0.010894	0.008603	0.001705	0.00219	0.002344
	0.021552	-0.008178	0.007955	0.002221	0.002784
		0.017524	-0.006994	0.00679	0.00211
			0.01448	-0.006819	0.005269
				0.012944	-0.005752
					0.011165
0.237517	0.237154	0.237201	0.23708	0.236933	0.236962
0.128013	0.127828	0.127623	0.127408	0.127224	0.127126
0.049103	0.048672	0.04855	0.04837	0.048253	0.048164
0.023997	0.023767	0.023463	0.023307	0.02315	0.023072
0.014323	0.013879	0.013715	0.013511	0.013347	0.013238
0.009888	0.009369	0.009058	0.0089	0.008756	0.008605
0.006755	0.00706	0.006642	0.006382	0.006227	0.006122
0.009627	0.004983	0.005251	0.004924	0.004755	0.004631
	0.007582	0.003865	0.004091	0.003857	0.003692
		0.006104	0.003066	0.003254	0.003043
			0.005022	0.002511	0.002717
				0.004195	0.002068
					0.003602

1916

1918

1920

1922

1924

1926

Fig. 19A

Fig. 19B

Fig. 19B

10029267-122801

2000

mask index	grey levels
1	31-116, 138-224
2	28-30, 225-227, 117, 138
3	25-27, 228-230, 118, 137
4	22-24, 231-233, 119, 136
5	19-21, 234-236, 120, 135
6	16-18, 237-239, 121, 134
7	13-15, 240-242, 122, 133
8	10-12, 243-245, 123, 132
9	7-9, 246-248, 124, 131
10	4-6, 249-251, 125, 130
11	2-3, 252-253, 126, 129
12	0-1, 254-255, 127, 128

2002

2004

2006

Fig. 20

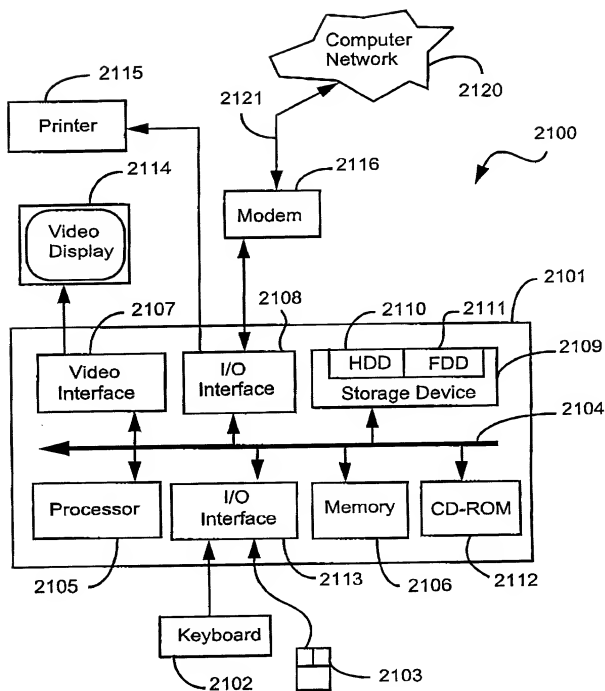


Fig. 21

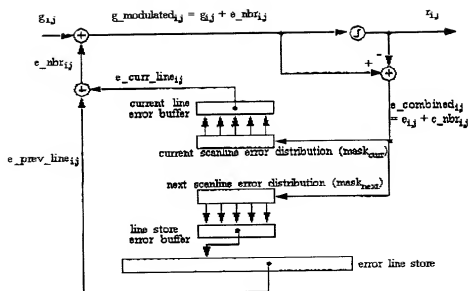


Fig. 22

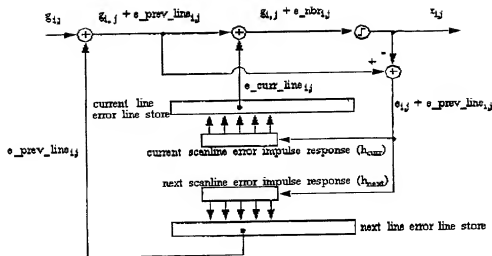


Fig. 23

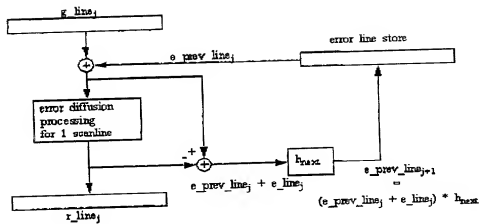
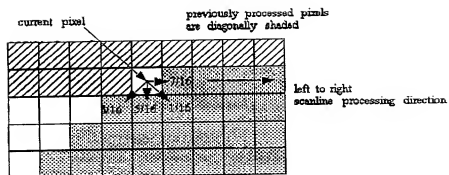


Fig. 24



pixels shaded with dots are those which receive an error contribution from the current pixel (whether directly or indirectly)

Fig. 25

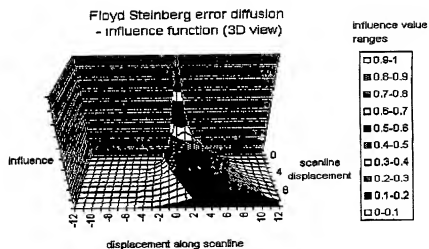


Fig. 26

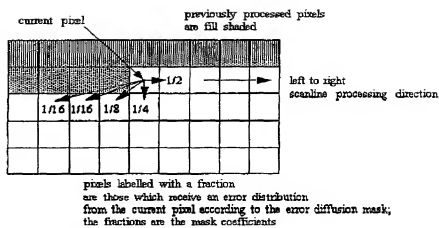
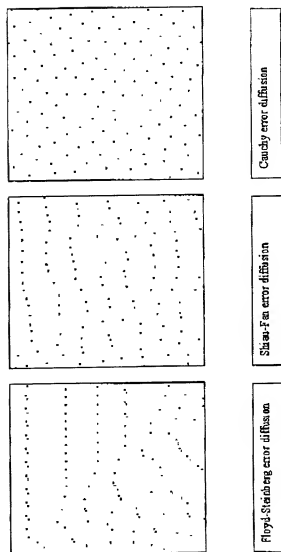


Fig. 27

**Fig. 28**

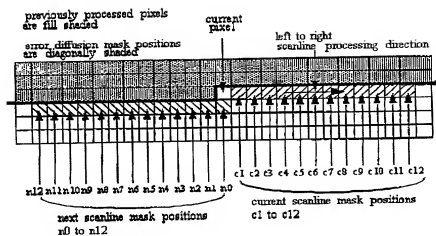


Fig. 29

10029267.122801

mask position	mask weight	mask position	mask weight
n0	0.236962		
n1	0.127126	c1	0.534015
n2	0.048164	c2	-0.080892
n3	0.023072	c3	0.0286
n4	0.013238	c4	0.007557
n5	0.008605	c5	0.003258
n6	0.006122	c6	0.005601
n7	0.004631	c7	0.002344
n8	0.003692	c8	0.002784
n9	0.003043	c9	0.00211
n10	0.002717	c10	0.003269
n11	0.002068	c11	-0.005752
n12	0.003602	c12	0.011165

Fig. 30

Floyd Steinberg error diffusion
next scanline error impulse response function
and its self-convolutions

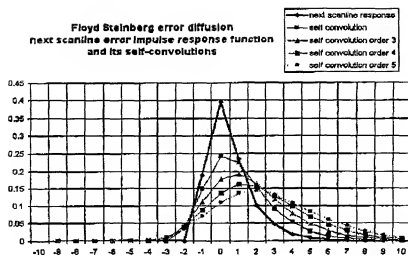


Fig. 31

Error diffusion of USP 8,363,127 (Shiau & Fan)
 (mask: 1/2, 1/4, 1/8, 1/16, 1/16)
 next scanline error impulse response function
 and its self-convolutions

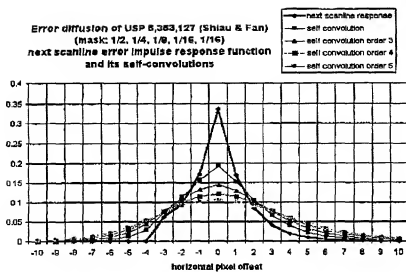


Fig. 32

$(\tanh(x)/x) (1/(1+x^2))$
 next scanline error impulse response function
 and its self-convolutions

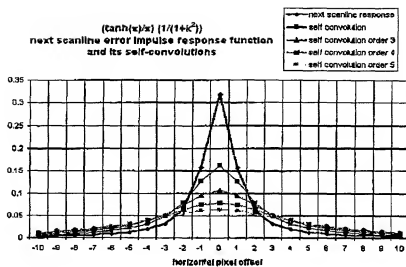


Fig. 33

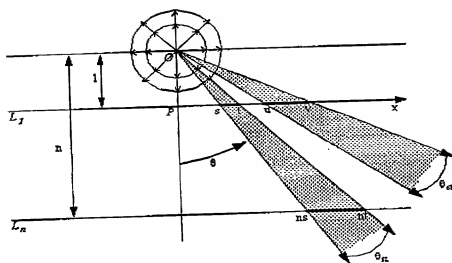


Fig. 34

pixel offset	mask 1	mask 2	mask 3	mask 4	mask 5	mask 6	mask 7	mask 8	mask 9	mask 10	mask 11	mask 12
c1	0.590522	0.474801	0.561741	0.536627	0.338262	0.536667	0.53547	0.535275	0.535142	0.535113	0.535478	0.534915
c2		0.063092	-0.122058	-0.030629	-0.080649	-0.076928	-0.07781	-0.077282	-0.080266	-0.080382	-0.08305	-0.080692
c3			0.099337	-0.006169	0.043546	0.02488	0.028431	0.036191	0.027959	0.03124	0.028874	0.0286
c4				0.037792	-0.01825	0.022132	0.008507	0.010402	0.008627	0.007733	0.007593	0.007557
c5					0.043114	-0.018664	0.010492	0.001604	0.002812	0.003383	0.003171	0.002358
c6						0.034447	-0.010039	0.012859	0.004904	0.005821	0.006146	0.005601
c7							0.025736	-0.010894	0.008683	0.001703	0.00219	0.002344
c8								0.031532	-0.009178	0.007055	0.002221	0.002784
c9									0.017334	-0.008994	0.00499	0.00211
c10										0.01448	-0.006819	0.005268
c11											0.012944	-0.002752
c12												0.011865
a0	0.202094	0.243788	0.226484	0.207727	0.207758	0.231552	0.237517	0.237154	0.237201	0.22798	0.206833	0.204962
a1	0.106364	0.137512	0.134784	0.138625	0.129104	0.128519	0.128013	0.127828	0.127623	0.127408	0.127224	0.127126
a2		0.000806	0.020122	0.051674	0.050389	0.049341	0.049112	0.048672	0.04835	0.04837	0.048275	0.048364
a3			0.042489	0.034984	0.035323	0.024637	0.022977	0.023787	0.023463	0.023207	0.02315	0.023072
a4				0.026159	0.014268	0.014971	0.014323	0.013979	0.013715	0.013511	0.013347	0.013298
a5					0.017872	0.006639	0.009888	0.009369	0.009028	0.0089	0.008736	0.008605
a6						0.012778	0.000753	0.00708	0.006642	0.006382	0.006217	0.006122
a7							0.006227	0.004993	0.005251	0.004934	0.004755	0.004631
a8								0.007582	0.003865	0.004081	0.003817	0.003622
a9									0.006104	0.003066	0.003254	0.003043
a10										0.005022	0.002111	0.002717
a11											0.004125	0.002068
a12												0.003602

Fig. 35

mask index	grey levels
1	31-116, 138-224
2	28-30, 225-227, 117, 138
3	25-27, 228-230, 118, 137
4	22-24, 231-233, 119, 136
5	19-21, 234-236, 120, 135
6	16-18, 237-239, 121, 134
7	13-15, 240-242, 122, 133
8	10-12, 243-245, 123, 132
9	7-9, 246-248, 124, 131
10	4-6, 249-251, 125, 130
11	2-3, 252-253, 126, 129
12	0-1, 254-255, 127, 128

Fig. 36